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LINE      PG/LN  A...B.....
000001      IDENTIFICATION DIVISION.
000002
000003      PROGRAM-ID.                ELIZA.
000004      *AUTHOR.                    ARNOLD J. TREMBLEY.
000005      *DATE-WRITTEN.              2017-10-01.
000006      *SECURITY.                THIS PROGRAM IS PUBLIC DOMAIN FREWARE.
000007
000008      *****
000009      *
000010      *      https://en.wikipedia.org/wiki/ELIZA
000011      *      ELIZA is an early natural language processing program
000012      *      created around 1964 by Joseph Weizenbaum at MIT. This
000013      *      version is adapted from ELIZA.BAS which appeared in
000014      *      Creative Computing magazine in 1977, written by Jeff
000015      *      Shrager and adapted for IBM PC in the early 1980's by
000016      *      Patricia Danielson and Paul Hashfield.
000017      *
000018      *      COBOL translation by Arnold Trembley, 2017-10-01.
000019      *      arnold.trembley@att.net
000020      *      Using MingW GnuCOBOL 2.2 for Windows 7.
000021      *      This version is public domain freeware.
000022      *
000023      *      ELIZA simulates a psychotherapist interacting with a
000024      *      human patient. Enter "shut up" to stop the dialog.
000025      *
000026      *****
000027
000028      ENVIRONMENT DIVISION.
000029
000030      CONFIGURATION SECTION.
000031
000032      REPOSITORY.
000033          FUNCTION ALL INTRINSIC.
000034
000035      INPUT-OUTPUT SECTION.
000036
000037      FILE-CONTROL.
000038
000039      DATA DIVISION.
000040
000041      FILE SECTION.
000042
000043      WORKING-STORAGE SECTION.
000044
000045      01 100-PROGRAM-FLAGS.
000046          05 100-EOF-FLAG                PIC X(01)  VALUE SPACE.
000047          88 88-100-ALL-DONE              VALUE "Y".
000048          05 100-KEYWORD-FLAG            PIC X(01)  VALUE SPACE.
000049          88 88-100-KEYWORD-FOUND        VALUE "Y".
000050          88 88-100-KEYWORD-NOT-FOUND    VALUE "N".
000051
000052      01 200-USER-INPUT                  PIC X(80)  VALUE SPACES.

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LINE	PG/LN	A...B.....			
000053					
000054	01	210-USER-INPUT-LC	PIC X(80)	VALUE SPACES.	
000055					
000056	01	220-LAST-USER-INPUT	PIC X(80)	VALUE SPACES.	
000057					
000058	01	230-TRANSLATED-INPUT	PIC X(80)	VALUE SPACES.	
000059					
000060	01	240-REPLY	PIC X(79)	VALUE SPACES.	
000061					
000062	01	250-SUBSTITUTE-WORK	PIC X(100)	VALUE SPACES.	
000063					
000064	01	300-PROGRAM-CONSTANTS.			
000065	05	300-MAX-KEYWORD-ENTRIES	PIC S9(4)	COMP VALUE +36.	
000066	05	300-MAX-SCAN-LEN	PIC S9(4)	COMP VALUE +30.	
000067	05	300-SHUT	PIC X(04)	VALUE "shut".	
000068	05	300-ASTERISK	PIC X(01)	VALUE "***.	
000069					
000070	01	400-PROGRAM-COUNTERS.			
000071	05	400-HOLD-KW-LEN	PIC S9(4)	COMP VALUE ZERO.	
000072	05	400-SCAN-LEN	PIC S9(4)	COMP VALUE ZERO.	
000073	05	400-HOLD-500-K	PIC S9(4)	COMP VALUE +0.	
000074	05	400-HOLD-OFFSET	PIC S9(4)	COMP VALUE +0.	
000075	05	400-OFFSET	PIC S9(4)	COMP VALUE +0.	
000076	05	400-SUB	PIC S9(4)	COMP VALUE ZERO.	
000077	05	400-SPACES-COUNT	PIC S9(4)	COMP VALUE ZERO.	
000078					
000079	01	500-KEYWORD-TABLE-DATA.			
000080	05	FILLER PIC X(16)	VALUE "07can you "		
000081	05	FILLER PIC X(16)	VALUE "05can i "		
000082	05	FILLER PIC X(16)	VALUE "07you are "		
000083	05	FILLER PIC X(16)	VALUE "06you're "		
000084	05	FILLER PIC X(16)	VALUE "07i don't "		
000085	05	FILLER PIC X(16)	VALUE "06i feel "		
000086	05	FILLER PIC X(16)	VALUE "13why don't you "		
000087	05	FILLER PIC X(16)	VALUE "11why can't i "		
000088	05	FILLER PIC X(16)	VALUE "07are you "		
000089	05	FILLER PIC X(16)	VALUE "07i can't "		
000090	05	FILLER PIC X(16)	VALUE "04i am "		
000091	05	FILLER PIC X(16)	VALUE "03i'm "		
000092	05	FILLER PIC X(16)	VALUE "03you "		
000093	05	FILLER PIC X(16)	VALUE "06i want "		
000094	05	FILLER PIC X(16)	VALUE "04what "		
000095	05	FILLER PIC X(16)	VALUE "03how "		
000096	05	FILLER PIC X(16)	VALUE "03who "		
000097	05	FILLER PIC X(16)	VALUE "05where "		
000098	05	FILLER PIC X(16)	VALUE "04when "		
000099	05	FILLER PIC X(16)	VALUE "03why "		
000100	05	FILLER PIC X(16)	VALUE "04name "		
000101	05	FILLER PIC X(16)	VALUE "05cause "		
000102	05	FILLER PIC X(16)	VALUE "05sorry "		
000103	05	FILLER PIC X(16)	VALUE "05dream "		
000104	05	FILLER PIC X(16)	VALUE "05hello "		

LINE	PG/LN	A...B.....
000105		05 FILLER PIC X(16) VALUE "02hi ".
000106		05 FILLER PIC X(16) VALUE "05maybe ".
000107		05 FILLER PIC X(16) VALUE "02no ".
000108		05 FILLER PIC X(16) VALUE "04your ".
000109		05 FILLER PIC X(16) VALUE "06always ".
000110		05 FILLER PIC X(16) VALUE "05think ".
000111		05 FILLER PIC X(16) VALUE "05alike ".
000112		05 FILLER PIC X(16) VALUE "03yes ".
000113		05 FILLER PIC X(16) VALUE "06friend ".
000114		05 FILLER PIC X(16) VALUE "08computer ".
000115		05 FILLER PIC X(16) VALUE "10NOKEYFOUND".
000116		
000117	01	500-KEYWORD-TABLE REDEFINES 500-KEYWORD-TABLE-DATA.
000118	05	500-KEYWORD-ENTRY OCCURS 36 TIMES
000119		INDEXED BY 500-K.
000120		10 500-KW-LEN PIC 9(02).
000121		10 500-KEYWORD PIC X(14).
000122		
000123	01	520-TRANSLATION-CONSTANTS.
000124	05	520-THING-IN PIC X(05) VALUE "thing".
000125	05	520-HIGH-IN PIC X(04) VALUE "high".
000126	05	520-SHI-IN PIC X(03) VALUE "shi".
000127	05	520-CHI-IN PIC X(03) VALUE "chi".
000128	05	520-HIT-IN PIC X(03) VALUE "hit".
000129	05	520-OUR-IN PIC X(03) VALUE "our".
000130	05	520-QMARK-IN PIC X(02) VALUE "?".
000131	05	520-XMARK-IN PIC X(02) VALUE "!".
000132	05	520-FSTOP-IN PIC X(02) VALUE ".".
000133		
000134	05	520-THING-OUT PIC X(05) VALUE "th!ng".
000135	05	520-HIGH-OUT PIC X(04) VALUE "h!gh".
000136	05	520-SHI-OUT PIC X(03) VALUE "sh!".
000137	05	520-CHI-OUT PIC X(03) VALUE "ch!".
000138	05	520-HIT-OUT PIC X(03) VALUE "h!t".
000139	05	520-OUR-OUT PIC X(03) VALUE "Our".
000140	05	520-QMARK-OUT PIC X(02) VALUE ".".
000141	05	520-FSTOP-OUT PIC X(02) VALUE "".
000142		
000143	05	520-ARE-IN PIC X(05) VALUE "are".
000144	05	520-WERE-IN PIC X(06) VALUE "were".
000145	05	520-YOU-IN PIC X(05) VALUE "you".
000146	05	520-YOUR-IN PIC X(06) VALUE "your".
000147	05	520-MY-IN PIC X(04) VALUE "my".
000148	05	520-IVE-IN PIC X(06) VALUE "i've".
000149	05	520-IM-IN PIC X(05) VALUE "i'm".
000150	05	520-I-AM-IN PIC X(06) VALUE "i am".
000151	05	520-ME-IN PIC X(04) VALUE "me".
000152	05	520-I-IN PIC X(03) VALUE "i".
000153	05	520-YOURE-IN PIC X(08) VALUE "you're".
000154	05	520-YOU-ARE-IN PIC X(09) VALUE "you are".
000155	05	520-YOURSELF-IN PIC X(10) VALUE "yourself".
000156		

LINE	PG/LN	A...B.....			
000157		05 520-AM-OUT	PIC X(04)	VALUE	" am ".
000158		05 520-WAS-OUT	PIC X(05)	VALUE	" was ".
000159		05 520-I -FIX	PIC X(04)	VALUE	" i# ".
000160		05 520-I M-FIX	PIC X(06)	VALUE	" i'm# ".
000161		05 520-I -AM-FIX	PIC X(07)	VALUE	" i am# ".
000162		05 520-MY-FIX	PIC X(05)	VALUE	" my# ".
000163		05 520-YOUR-FIX	PIC X(07)	VALUE	" your# ".
000164		05 520-YOUE-OUT	PIC X(08)	VALUE	" you've ".
000165		05 520-YOURE-OUT	PIC X(08)	VALUE	" you're ".
000166		05 520-YOU-FIX	PIC X(06)	VALUE	" you# ".
000167		05 520-MYSELF-OUT	PIC X(08)	VALUE	" myself ".
000168					
000169		05 520-I -OUT	PIC X(03)	VALUE	" I ".
000170		05 520-I M-OUT	PIC X(05)	VALUE	" I'm ".
000171		05 520-I -AM-OUT	PIC X(06)	VALUE	" I am ".
000172		05 520-MY-OUT	PIC X(04)	VALUE	" my ".
000173		05 520-YOUR-OUT	PIC X(06)	VALUE	" your ".
000174		05 520-YOU-OUT	PIC X(05)	VALUE	" you ".
000175					
000176					
000177	01	540-REPLY-TABLE-DATA.			
000178		05 PIC x(60)	VALUE	"29Don't you believe that I can**".	
000179		05 PIC X(60)	VALUE	"29Perhaps you would like me to**".	
000180		05 PIC x(60)	VALUE	"29Do you want me to be able to**".	
000181		05 PIC x(60)	VALUE	"26Perhaps you don't want to**".	
000182		05 PIC x(60)	VALUE	"26Do you want to be able to**".	
000183		05 PIC x(60)	VALUE	"26What makes you think I am**".	
000184					
000185		05 PIC X(30)	VALUE	"35Does it please you to believ".	
000186		05 PIC X(30)	VALUE	"e I am**".	
000187					
000188		05 PIC x(60)	VALUE	"29Perhaps you would like to be**".	
000189					
000190		05 PIC X(30)	VALUE	"31Do you sometimes wish you we".	
000191		05 PIC X(30)	VALUE	"re**".	
000192					
000193		05 PIC x(60)	VALUE	"17Don't you really**".	
000194		05 PIC x(60)	VALUE	"14Why don't you**".	
000195		05 PIC x(60)	VALUE	"26Do you wish to be able to**".	
000196		05 PIC x(60)	VALUE	"22Does that trouble you?".	
000197		05 PIC x(60)	VALUE	"18Do you often feel **".	
000198		05 PIC x(60)	VALUE	"18Do you often feel **".	
000199		05 PIC x(60)	VALUE	"21Do you enjoy feeling**".	
000200		05 PIC x(60)	VALUE	"30Do you really believe I don't**".	
000201		05 PIC x(60)	VALUE	"28Perhaps in good time I will**".	
000202		05 PIC x(60)	VALUE	"18Do you want me to**".	
000203					
000204		05 PIC X(30)	VALUE	"35Do you think you should be a".	
000205		05 PIC X(30)	VALUE	"ble to**".	
000206					
000207		05 PIC x(60)	VALUE	"14Why can't you**".	
000208					

LINE	PG/LN	A...B.....			
000209		05 PIC X(30)	VALUE	"46Why are you interested in wh".	
000210		05 PIC X(30)	VALUE	"ether or not I am*"	
000211					
000212		05 PIC x(60)	VALUE	"31Would you prefer if I were not*"	
000213		05 PIC x(60)	VALUE	"31Perhaps in your fantasies I am*"	
000214		05 PIC x(60)	VALUE	"26How do you know you can't*"	
000215		05 PIC x(60)	VALUE	"15Have you tried?"	
000216		05 PIC x(60)	VALUE	"20Perhaps you can now*"	
000217					
000218		05 PIC X(30)	VALUE	"35Did you come to me because y".	
000219		05 PIC X(30)	VALUE	"ou are*"	
000220					
000221		05 PIC x(60)	VALUE	"23How long have you been*"	
000222					
000223		05 PIC X(30)	VALUE	"34Do you believe it is normal "	
000224		05 PIC X(30)	VALUE	"to be*"	
000225					
000226		05 PIC x(60)	VALUE	"19Do you enjoy being*"	
000227		05 PIC x(60)	VALUE	"31We were discussing you--not me."	
000228		05 PIC x(60)	VALUE	"06Oh, I*"	
000229					
000230		05 PIC X(30)	VALUE	"44You're not really talking ab".	
000231		05 PIC X(30)	VALUE	"out me, are you?"	
000232					
000233		05 PIC X(30)	VALUE	"37What would it mean to you if".	
000234		05 PIC X(30)	VALUE	" you got*"	
000235					
000236		05 PIC x(60)	VALUE	"16Why do you want*"	
000237		05 PIC x(60)	VALUE	"21Suppose you soon got*"	
000238		05 PIC x(60)	VALUE	"22What if you never got*"	
000239		05 PIC x(60)	VALUE	"22I sometimes also want*"	
000240		05 PIC x(60)	VALUE	"15Why do you ask?"	
000241		05 PIC x(60)	VALUE	"32Does that question interest you?"	
000242					
000243		05 PIC X(30)	VALUE	"38What answer would please you".	
000244		05 PIC X(30)	VALUE	" the most?"	
000245					
000246		05 PIC x(60)	VALUE	"18What do you think?"	
000247					
000248		05 PIC X(30)	VALUE	"38Are such questions on your m".	
000249		05 PIC X(30)	VALUE	"ind often?"	
000250					
000251		05 PIC X(30)	VALUE	"40What is it that you really w".	
000252		05 PIC X(30)	VALUE	"ant to know?"	
000253					
000254		05 PIC x(60)	VALUE	"27Have you asked anyone else?"	
000255					
000256		05 PIC X(30)	VALUE	"37Have you asked such question".	
000257		05 PIC X(30)	VALUE	"s before?"	
000258					
000259		05 PIC X(30)	VALUE	"42What else comes to mind when".	
000260		05 PIC X(30)	VALUE	" you ask that?"	

LINE	PG/LN	A...B.....
000261		
000262	05	PIC x(60) VALUE "24Names don't interest me."
000263		
000264	05	PIC X(30) VALUE "41I don't care about names -- "
000265	05	PIC X(30) VALUE "Please go on."
000266		
000267	05	PIC x(60) VALUE "24Is that the real reason?"
000268		
000269	05	PIC X(30) VALUE "37Don't any other reasons come"
000270	05	PIC X(30) VALUE " to mind?"
000271		
000272	05	PIC X(30) VALUE "39Does that reason explain any"
000273	05	PIC X(30) VALUE "thing else?"
000274		
000275	05	PIC X(30) VALUE "34What other reasons might the"
000276	05	PIC X(30) VALUE "re be?"
000277		
000278	05	PIC x(60) VALUE "23Please don't apologize!"
000279	05	PIC x(60) VALUE "28Apologies are not necessary."
000280		
000281	05	PIC X(30) VALUE "45What feelings do you have wh"
000282	05	PIC X(30) VALUE "en you apologize?"
000283		
000284	05	PIC x(60) VALUE "22Don't be so defensive!"
000285		
000286	05	PIC X(30) VALUE "36What does that dream suggest"
000287	05	PIC X(30) VALUE " to you?"
000288		
000289	05	PIC x(60) VALUE "19Do you dream often?"
000290		
000291	05	PIC X(30) VALUE "35What persons appear in your "
000292	05	PIC X(30) VALUE "dreams?"
000293		
000294	05	PIC X(30) VALUE "33Are you disturbed by your dr"
000295	05	PIC X(30) VALUE "eams?"
000296		
000297	05	PIC X(30) VALUE "43How do you do ... Please stat"
000298	05	PIC X(30) VALUE "e your problem."
000299		
000300	05	PIC x(60) VALUE "29You don't seem quite certain."
000301	05	PIC x(60) VALUE "23Why the uncertain tone?"
000302	05	PIC x(60) VALUE "27Can't you be more positive?"
000303	05	PIC x(60) VALUE "16You aren't sure?"
000304	05	PIC x(60) VALUE "15Don't you know?"
000305		
000306	05	PIC X(30) VALUE "38Are you saying no just to be"
000307	05	PIC X(30) VALUE " negative?"
000308		
000309	05	PIC x(60) VALUE "29You are being a bit negative."
000310	05	PIC x(60) VALUE "08Why not?"
000311	05	PIC x(60) VALUE "13Are you sure?"
000312	05	PIC x(60) VALUE "07Why no?"

LINE	PG/LN	A...B.....			
000313		05 PIC x(60)	VALUE	"31Why are you concerned about my*"	
000314		05 PIC x(60)	VALUE	"20What about your own*"	
000315					
000316		05 PIC X(30)	VALUE	"36Can you think of a speci fi c "	
000317		05 PIC X(30)	VALUE	"exampl e? "	
000318					
000319		05 PIC x(60)	VALUE	"05When? "	
000320		05 PIC x(60)	VALUE	"25What are you thi nki ng of? "	
000321		05 PIC x(60)	VALUE	"15Real ly, al ways? "	
000322		05 PIC x(60)	VALUE	"23Do you real ly thi nk so? "	
000323		05 PIC x(60)	VALUE	"21But you are not sure* "	
000324		05 PIC x(60)	VALUE	"13Do you doubt* "	
000325		05 PIC x(60)	VALUE	"12I n what way? "	
000326		05 PIC x(60)	VALUE	"28What resembl ance do you see? "	
000327					
000328		05 PIC X(30)	VALUE	"40What does the si mi la ri ty sug "	
000329		05 PIC X(30)	VALUE	"gest to you? "	
000330					
000331		05 PIC X(30)	VALUE	"34What other connections do yo "	
000332		05 PIC X(30)	VALUE	"u see? "	
000333					
000334		05 PIC X(30)	VALUE	"38Coul d there real ly be some c "	
000335		05 PIC X(30)	VALUE	"onnecti on? "	
000336					
000337		05 PIC x(60)	VALUE	"04How? "	
000338		05 PIC x(60)	VALUE	"24You seem qui te posi ti ve. "	
000339		05 PIC x(60)	VALUE	"13Are you sure? "	
000340		05 PIC x(60)	VALUE	"06I see. "	
000341		05 PIC x(60)	VALUE	"13I understand. "	
000342					
000343		05 PIC X(30)	VALUE	"41Why do you bring up the topi "	
000344		05 PIC X(30)	VALUE	"c of fri ends? "	
000345					
000346		05 PIC x(60)	VALUE	"26Do your fri ends worry you? "	
000347		05 PIC x(60)	VALUE	"28Do your fri ends pick on you? "	
000348					
000349		05 PIC X(30)	VALUE	"34Are you sure you have any fr "	
000350		05 PIC X(30)	VALUE	"i ends? "	
000351					
000352		05 PIC x(60)	VALUE	"30Do you impose on your fri ends? "	
000353					
000354		05 PIC X(30)	VALUE	"42Perhaps your l ove for fri end "	
000355		05 PIC X(30)	VALUE	"s worri es you. "	
000356					
000357		05 PIC x(60)	VALUE	"23Do computers worry you? "	
000358					
000359		05 PIC X(30)	VALUE	"39Are you tal ki ng about me i n "	
000360		05 PIC X(30)	VALUE	"parti cul ar? "	
000361					
000362		05 PIC X(30)	VALUE	"31Are you fri ghtened by machi n "	
000363		05 PIC X(30)	VALUE	"es? "	
000364					

LINE	PG/LN	A...B.....
000365		05 PIC x(60) VALUE "29Why do you menti on computers?".
000366		05 PIC X(30) VALUE "56What do you think machi nes h".
000367		05 PIC X(30) VALUE "ave to do wi th your probl em?".
000368		05 PIC X(30) VALUE "42Don' t you think computers ca".
000369		05 PIC X(30) VALUE "n hel p peopl e?".
000370		05 PIC X(30) VALUE "43What is it about machi nes th".
000371		05 PIC X(30) VALUE "at worri es you?".
000372		05 PIC X(30) VALUE "44Say, do you have any psychol".
000373		05 PIC X(30) VALUE "ogi cal probl ems?".
000374		05 PIC x(60) VALUE "30What does that suggest to you?".
000375		05 PIC x(60) VALUE "06I see.".
000376		05 PIC X(30) VALUE "36I'm not sure I understand yo".
000377		05 PIC X(30) VALUE "u fully.".
000378		05 PIC X(30) VALUE "36Come, Come, el uci date your t".
000379		05 PIC X(30) VALUE "houghts.".
000380		05 PIC x(60) VALUE "26Can you el aborate on that?".
000381		05 PIC x(60) VALUE "26That is quite interesting.".
000382	01	540-REPLY-TABLE REDEFINES 540-REPLY-TABLE-DATA.
000383	05	540-REPLY-ENTRY OCCURS 112 TIMES
000384		INDEXED BY 540-R.
000385	10	540-REPLY-LENGTH PIC 9(02).
000386	10	540-REPLY PIC X(58).
000387	01	560-REPLY-LOCATER-DATA.
000388	05	FILLER PIC X(12) VALUE "000100030004".
000389	05	FILLER PIC X(12) VALUE "000400050005".
000400	05	FILLER PIC X(12) VALUE "000600090009".
000401	05	FILLER PIC X(12) VALUE "000600090009".
000402	05	FILLER PIC X(12) VALUE "001000130013".
000403	05	FILLER PIC X(12) VALUE "001400160016".
000404	05	FILLER PIC X(12) VALUE "001700190019".
000405	05	FILLER PIC X(12) VALUE "002000210021".
000406	05	FILLER PIC X(12) VALUE "002200240024".
000407	05	FILLER PIC X(12) VALUE "002500270027".
000408	05	FILLER PIC X(12) VALUE "002800310031".
000409	05	FILLER PIC X(12) VALUE "002800310031".
000410	05	FILLER PIC X(12) VALUE "003200340034".
000411	05	FILLER PIC X(12) VALUE "003500390039".
000412	05	FILLER PIC X(12) VALUE "004000480048".
000413	05	FILLER PIC X(12) VALUE "004000480048".
000414	05	FILLER PIC X(12) VALUE "004000480048".
000415	05	FILLER PIC X(12) VALUE "004000480048".
000416	05	FILLER PIC X(12) VALUE "004000480048".



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LINE      PG/LN  A...B.....
000417      05  FILLER          PIC X(12)  VALUE "004000480048".
000418      05  FILLER          PIC X(12)  VALUE "004000480048".
000419      05  FILLER          PIC X(12)  VALUE "004900500050".
000420      05  FILLER          PIC X(12)  VALUE "005100540054".
000421      05  FILLER          PIC X(12)  VALUE "005500580058".
000422      05  FILLER          PIC X(12)  VALUE "005900620062".
000423      05  FILLER          PIC X(12)  VALUE "006300630063".
000424      05  FILLER          PIC X(12)  VALUE "006300630063".
000425      05  FILLER          PIC X(12)  VALUE "006400680068".
000426      05  FILLER          PIC X(12)  VALUE "006900730073".
000427      05  FILLER          PIC X(12)  VALUE "007400750075".
000428      05  FILLER          PIC X(12)  VALUE "007600790079".
000429      05  FILLER          PIC X(12)  VALUE "008000820082".
000430      05  FILLER          PIC X(12)  VALUE "008300890089".
000431      05  FILLER          PIC X(12)  VALUE "009000920092".
000432      05  FILLER          PIC X(12)  VALUE "009300980098".
000433      05  FILLER          PIC X(12)  VALUE "009901050105".
000434      05  FILLER          PIC X(12)  VALUE "010601120112".
000435
000436      01  560-REPLY-LOCATER-TABLE REDEFINES 560-REPLY-LOCATER-DATA.
000437      05  560-REPLY-LOCATER-ENTRY OCCURS 36 TIMES INDEXED BY 560-L.
000438          10  560-REPLY-LO          PIC 9(04).
000439          10  560-REPLY-HI          PIC 9(04).
000440          10  560-REPLY-LAST-USED   PIC 9(04).
000441
000442      01  600-PROGRAM-MESSAGES.
000443      05  600-REPLY-LIST.
000444          10  FILLER          PIC X(07)  VALUE 'Reply: '.
000445          10  600-REPLY-DATA      PIC X(70)  VALUE SPACES.
000446
000447      05  600-INITIAL-MESSAGE      PIC X(40)  VALUE
000448          "Hi! I'm ELIZA. What's your problem?".
000449
000450      05  600-GOODBYE-MESSAGE      PIC X(40)  VALUE
000451          "If that's how you feel --goodbye...".
000452
000453      05  600-NO-REPEAT-MSG        PIC X(32)  VALUE
000454          "Please don't repeat yourself!".
000455
000456      PROCEDURE DIVISION.
000457
000458      *****
000459      *      0 0 0 0 - M A I N L I N E .      *
000460      *****
000461      *      START THE PSYCHOTHERAPIST DIALOG WITH THE USER, ANALYZE      *
000462      *      THE USER INPUT AND GENERATE THE REPLIES. THE USER CAN      *
000463      *      TYPE "SHUT UP" OR SIMPLY "SHUT" TO TERMINATE THE SESSION.      *
000464      *****
000465
000466      0000-MAINLINE.
000467
000468      DISPLAY SPACE

```

LINE PG/LN A...B.....

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warning: DISPLAY statement not terminated by END-DISPLAY
000469             MOVE SPACE                TO 100-EOF-FLAG
000470             DISPLAY 600-INITIAL-MESSAGE
warning: DISPLAY statement not terminated by END-DISPLAY
000471             PERFORM UNTIL 88-100-ALL-DONE
000472                 ACCEPT 200-USER-INPUT
warning: ACCEPT statement not terminated by END-ACCEPT
000473                 MOVE FUNCTION LOWER-CASE (200-USER-INPUT)
000474                     TO 210-USER-INPUT-LC
000475                 IF 210-USER-INPUT-LC (1:4) = 300-SHUT
000476                     SET 88-100-ALL-DONE TO TRUE
000477                     DISPLAY 600-GOODBYE-MESSAGE
warning: DISPLAY statement not terminated by END-DISPLAY
000478                 ELSE
000479                     IF 210-USER-INPUT-LC = 220-LAST-USER-INPUT
000480                         DISPLAY 600-NO-REPEAT-MSG
warning: DISPLAY statement not terminated by END-DISPLAY
000481                 ELSE
000482                     MOVE 210-USER-INPUT-LC
000483                         TO 220-LAST-USER-INPUT
000484                     PERFORM 1000-SCAN-FOR-KEYWORD
000485                     IF 400-HOLD-OFFSET > ZERO
000486                         PERFORM 2000-TRANSLATE-USER-INPUT
000487                     END-IF
000488                     PERFORM 3000-BUILD-KEYWORD-REPLY
000489                 END-IF
000490             END-IF
000491         END-PERFORM
000492
000493     STOP RUN.
000494
000495 *****
000496 *      1 0 0 0 - S C A N - F O R - K E Y W O R D .      *
000497 *****
000498 *      SEARCH THE USER INPUT FOR KEYWORDS THAT WILL TRIGGER      *
000499 *      THE RESPONSES FROM THE REPLY TABLE.      *
000500 *****
000501
000502     1000-SCAN-FOR-KEYWORD.
000503
000504         PERFORM 1100-MASK-STRING-HI
000505
000506         SET 88-100-KEYWORD-NOT-FOUND TO TRUE
000507         MOVE ZERO                TO 400-HOLD-OFFSET
000508         PERFORM VARYING 400-SUB FROM +1 BY +1
000509             UNTIL 400-SUB > 300-MAX-SCAN-LEN
000510             OR      88-100-KEYWORD-FOUND
000511         PERFORM VARYING 500-K FROM +1 BY +1
000512             UNTIL 500-K > 300-MAX-KEYWORD-ENTRIES
000513             OR      88-100-KEYWORD-FOUND
000514         MOVE 500-KW-LEN (500-K)
000515             TO 400-HOLD-KW-LEN

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LINE    PG/LN  A...B.....
000516                      IF 210-USER-INPUT-LC (400-SUB: 400-HOLD-KW-LEN) =
000517                        500-KEYWORD (500-K)
000518                        SET 400-HOLD-500-K TO 500-K
warning: some di gi ts may be truncated
000519                        SET 88-100-KEYWORD-FOUND TO TRUE
000520                        COMPUTE 400-HOLD-OFFSET =
warning: COMPUTE statement not terminated by END-COMPUTE
000521                        400-SUB + 400-HOLD-KW-LEN
000522                        COMPUTE 400-SUB = 400-SCAN-LEN + 1
warning: COMPUTE statement not terminated by END-COMPUTE
000523                        END-IF
000524                        END-PERFORM
000525                        END-PERFORM
000526
000527                      IF 88-100-KEYWORD-NOT-FOUND
000528                        MOVE 300-MAX-KEYWORD-ENTRIES
000529                        TO 400-HOLD-500-K
000530                        SET 88-100-KEYWORD-FOUND TO TRUE
000531                      END-IF
000532
000533                      PERFORM 1200-RESTORE-STRING-HI
000534                      .
000535
000536                      *****
000537                      *      1 1 0 0 - M A S K - S T R I N G - H I .      *
000538                      *****
000539                      *      WORDS LIKE "THING" AND "HIGH" WERE CAUSING A KEYWORD      *
000540                      *      "HI" MATCH THAT TRIGGERED THE HELLO/HI KEYWORD RESPONSES,  *
000541                      *      SO THEY ARE MASKED HERE TO PREVENT THAT.                *
000542                      *      ALSO REMOVE TRAILING "?", "!", AND "." CHARACTERS.        *
000543                      *****
000544
000545                      1100-MASK-STRING-HI .
000546
000547                      MOVE FUNCTION SUBSTITUTE
000548                      (210-USER-INPUT-LC, 520-THING-IN, 520-THING-OUT,
000549                      520-HIGH-IN, 520-HIGH-OUT,
000550                      520-SHI-IN, 520-SHI-OUT,
000551                      520-CHI-IN, 520-CHI-OUT,
000552                      520-HIT-IN, 520-HIT-OUT,
000553                      520-OUR-IN, 520-OUR-OUT,
000554                      520-QMARK-IN, 520-QMARK-OUT,
000555                      520-XMARK-IN, 520-QMARK-OUT,
000556                      520-FSTOP-IN, 520-FSTOP-OUT)
000557                      TO 250-SUBSTITUTE-WORK
000558                      MOVE 250-SUBSTITUTE-WORK TO 210-USER-INPUT-LC
warning: sending field larger than receiving field
000559                      *****
000560                      *      REMOVE MULTIPLE TRAILING QUESTION MARKS, EXCLAMATION      *
000561                      *      POINTS, AND PERIODS (FULL STOPS).                      *
000562                      *****
000563                      MOVE FUNCTION SUBSTITUTE

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LINE      PG/LN  A...B.....
000564                (210-USER-INPUT-LC, 520-QMARK-IN, 520-QMARK-OUT,
000565                520-XMARK-IN, 520-QMARK-OUT,
000566                520-FSTOP-IN, 520-FSTOP-OUT)
000567                TO 250-SUBSTITUTE-WORK
000568      MOVE 250-SUBSTITUTE-WORK      TO 210-USER-INPUT-LC
000569 warni ng: sendi ng fi el d l arger than recei vi ng fi el d
000570      MOVE FUNCTION SUBSTITUTE
000571                (210-USER-INPUT-LC, 520-QMARK-IN, 520-QMARK-OUT,
000572                520-XMARK-IN, 520-QMARK-OUT,
000573                520-FSTOP-IN, 520-FSTOP-OUT)
000574                TO 250-SUBSTITUTE-WORK
000574      MOVE 250-SUBSTITUTE-WORK      TO 210-USER-INPUT-LC
000575 warni ng: sendi ng fi el d l arger than recei vi ng fi el d
000576      .
000577      *****
000578      *      1 2 0 0 - R E S T O R E - S T R I N G - H I .      *
000579      *****
000580      *      AFTER COMPLETING THE KEYWORD SEARCH, RESTORE THE "HI "      *
000581      *      STRING IN THE USER INPUT.      *
000582      *****
000583
000584      1200-RESTORE-STRING-HI .
000585
000586      MOVE FUNCTION SUBSTITUTE
000587                (210-USER-INPUT-LC, 520-THING-OUT, 520-THING-IN,
000588                520-HIGH-OUT, 520-HIGH-IN,
000589                520-SHI -OUT, 520-SHI -IN,
000590                520-CHI -OUT, 520-CHI -IN,
000591                520-HIT-OUT, 520-HIT-IN,
000592                520-OUR-OUT, 520-OUR-IN)
000593                TO 250-SUBSTITUTE-WORK
000594      MOVE 250-SUBSTITUTE-WORK      TO 210-USER-INPUT-LC
000595 warni ng: sendi ng fi el d l arger than recei vi ng fi el d
000596      .
000597      *****
000598      *      2 0 0 0 - T R A N S L A T E - U S E R - I N P U T .      *
000599      *****
000600      *      PERFORM PRONOUN REPLACEMENT AND CONJUGATION ON THE USER      *
000601      *      INPUT SO IT WILL SOUND FAIRLY NORMAL WHEN APPENDED TO      *
000602      *      THE DOCTOR'S REPLY.      *
000603      *****
000604
000605      2000-TRANSLATE-USER-INPUT.
000606
000607      MOVE 210-USER-INPUT-LC (400-HOLD-OFFSET:)
000608                TO 230-TRANSLATED-INPUT.
000609
000610      MOVE FUNCTION SUBSTITUTE
000611                (230-TRANSLATED-INPUT, 520-ARE-IN, 520-AM-OUT,
000612                520-WERE-IN, 520-WAS-OUT

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LINE      PG/LN  A...B.....
000613                                520-YOU-IN,    520-I-FIX,
000614                                520-YOUR-IN,   520-MY-FIX,
000615                                520-MY-IN,    520-YOUR-FIX,
000616                                520-I-VE-IN,   520-YOUE-OUT,
000617                                520-I-M-IN,    520-YOURE-OUT,
000618                                520-I-AM-IN,   520-YOURE-OUT,
000619                                520-ME-IN,    520-YOU-FIX,
000620                                520-I-IN,     520-YOU-FIX,
000621                                520-YOURE-IN  520-I-M-FIX,
000622                                520-YOU-ARE-IN 520-I-AM-FIX,
000623                                520-YOURSELF-IN, 520-MYSELF-OUT)
000624                                TO 250-SUBSTITUTE-WORK.
000625
000626                                MOVE 250-SUBSTITUTE-WORK TO 230-TRANSLATED-INPUT.
warning: sending field larger than receiving field
000627
000628                                MOVE FUNCTION SUBSTITUTE
000629                                (230-TRANSLATED-INPUT, 520-I-FIX,    520-I-OUT,
000630                                520-I-M-FIX,    520-I-M-OUT,
000631                                520-I-AM-FIX,    520-I-AM-OUT,
000632                                520-MY-FIX,    520-MY-OUT,
000633                                520-YOUR-FIX,    520-YOUR-OUT,
000634                                520-YOU-FIX,    520-YOU-OUT)
000635                                TO 250-SUBSTITUTE-WORK.
000636
000637                                MOVE 250-SUBSTITUTE-WORK TO 230-TRANSLATED-INPUT.
warning: ignoring redundant .
warning: sending field larger than receiving field
000638
000639
000640                                *****
000641                                * 3000-BUILD-KEYWORD-REPLY. *
000642                                *****
000643                                * BUILD THE REPLY BASED ON THE KEYWORD FOUND IN THE USER *
000644                                * INPUT. NOTE THERE ARE A VARIABLE NUMBER OF POSSIBLE *
000645                                * REPLIES FOR EACH KEYWORD, AND SOME REPLIES INCLUDE TEXT *
000646                                * ECHOED FROM THE USER INPUT. *
000647                                *****
000648
000649                                3000-BUILD-KEYWORD-REPLY.
000650
000651                                SET 560-L TO 400-HOLD-500-K
warning: ADD statement not terminated by END-ADD
000652                                ADD +1 TO 560-REPLY-LAST-USED (560-L)
000653                                IF 560-REPLY-LAST-USED (560-L) > 560-REPLY-HI (560-L)
000654                                MOVE 560-REPLY-LO (560-L) TO 560-REPLY-LAST-USED (560-L)
000655                                END-IF
000656
000657                                SET 540-R TO 560-REPLY-LAST-USED (560-L)
000658                                MOVE 540-REPLY (540-R) TO 240-REPLY
000659                                MOVE 540-REPLY-LENGTH (540-R) TO 400-SUB
000660                                IF 240-REPLY (400-SUB:1) = 300-ASTERISK

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LINE      PG/LN  A...B.....
000661      MOVE SPACE                      TO 240-REPLY (400-SUB: 1)
warning: sending field larger than receiving field
000662      MOVE 230-TRANSLATED-INPUT
000663                      TO 240-REPLY (400-SUB: )
000664      PERFORM 3100-FIX-MORE-BAD-GRAMMAR
000665      MOVE ZERO                      TO 400-SPACES-COUNT
000666      INSPECT 240-REPLY TALLYING 400-SPACES-COUNT
000667      FOR TRAILING SPACES
000668      *****
000669      *      MERGE USER INPUT INTO THE REPLY AND THEN CORRECT      *
000670      *      ENDING PUNCTUATION FOR "?" OR "." (FULL-STOP).      *
000671      *****
000672      IF 400-SPACES-COUNT > ZERO
000673      AND 400-SPACES-COUNT < (LENGTH OF 240-REPLY) - 1
000674      COMPUTE 400-OFFSET =
000675      (LENGTH OF 240-REPLY) - 400-SPACES-COUNT + 1
000676      END-COMPUTE
000677      IF 560-REPLY-LAST-USED (560-L) = 02 OR 04 OR 05
000678      OR 08 OR 18 OR 24 OR 33 OR 39 OR 81
000679      MOVE "."                      TO 240-REPLY (400-OFFSET: 1)
000680      ELSE
000681      MOVE "?"                      TO 240-REPLY (400-OFFSET: 1)
000682      END-IF
000683      END-IF
000684      END-IF
000685
warning: DISPLAY statement not terminated by END-DISPLAY
000686      DISPLAY 240-REPLY
000687      .
000688
000689      *****
000690      *      3 1 0 0 - F I X - M O R E - B A D - G R A M M A R .      *
000691      *****
000692      *      HERE ARE SOME MORE FIXUPS FOR GRAMMAR PROBLEMS.  BUT IT      *
000693      *      DOESN'T SOLVE ALL OF THEM.      *
000694      *****
000695
000696      3100-FIX-MORE-BAD-GRAMMAR.
000697
000698      MOVE FUNCTION SUBSTITUTE (240-REPLY,
000699      " you want I ",          " you want me ",
000700      " you got I ",          " you got me ",
000701      " to make I ",          " to make me ",
000702      " you been I ",        " you been me ",
000703      " you be I ",          " you be me ",
000704      " to be I ",           " to be me ",
000705      " soon got I ",        " soon got me ",
000706      " never got I ",       " never got me ",
000707      " sometimes also want I ", " sometimes also want me ",
000708      " normal to be I ",     " normal to be me ",
000709      " enjoy being I ",      " enjoy being me ",
000710      " can't make I ",       " can't make me ",

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LINE      PG/LN  A...B.....
000711          " can now make I ",          " can now make me ",
000712          " I are ",          " I am ",
000713          " you am ",          " you are ",
000714          " wi th I ",          " wi th me")
000715                                TO 250-SUBSTI TUTE-WORK.
000716
warning: sendi ng fi el d l arger  than recei vi ng fi el d
000717          MOVE 250-SUBSTI TUTE-WORK TO 240-REPLY.
000718
000719          END PROGRAM ELI ZA.
```

NAME	DEFINED	REFERENCES				
100-PROGRAM-FLAGS	45	referenced by child				
100-EOF-FLAG	46	*469	*476			
88-100-ALL-DONE	47	471	476			
100-KEYWORD-FLAG	48	*506	*519	*530		
88-100-KEYWORD-FOUND	49	510	513	519	530	
88-100-KEYWORD-NOT-FOUND	50	506	527			
200-USER-INPUT	52	*472	473			
210-USER-INPUT-LC	54	*474	475	479	482	516
		548	*558	564	*568	570
		*574	587	*594	607	
220-LAST-USER-INPUT	56	479	*483			
230-TRANSLATED-INPUT	58	*608	611	*626	629	*637
		661				
240-REPLY	60	*657	659	*660	*662	665
		672	674	*678	*680	685
		697	*716			
250-SUBSTITUTE-WORK	62	*557	558	*567	568	*573
		574	*593	594	*624	626
		*635	637	*714	716	
300-PROGRAM-CONSTANTS	64	referenced by child				
300-MAX-KEYWORD-ENTRIES	65	512	528			
300-MAX-SCAN-LEN	66	509				
300-SHUT	67	475				
300-ASTERISK	68	659				
400-PROGRAM-COUNTERS	70	referenced by child				
400-HOLD-KW-LEN	71	*515	516	521		
400-SCAN-LEN	72	522				
400-HOLD-500-K	73	*518	*529	650		
400-HOLD-OFFSET	74	485	*507	520	607	
400-OFFSET	75	673	678	680		
400-SUB	76	508	509	516	521	522
		*658	659	660	662	
400-SPACES-COUNT	77	*664	665	671	672	674
500-KEYWORD-TABLE-DATA	79	not referenced				
500-KEYWORD-TABLE	117	referenced by child				
500-KEYWORD-ENTRY	118	referenced by child				
500-KW-LEN	120	514				
500-KEYWORD	121	517				
520-TRANSLATION-CONSTANTS	123	referenced by child				
520-THING-IN	124	548	587			
520-HIGH-IN	125	549	588			
520-SHIFT-IN	126	550	589			
520-CHARACTER-IN	127	551	590			
520-HIT-IN	128	552	591			
520-OUR-IN	129	553	592			
520-QMARK-IN	130	554	564	570		
520-XMARK-IN	131	555	565	571		
520-FSTOP-IN	132	556	566	572		
520-THING-OUT	134	548	587			
520-HIGH-OUT	135	549	588			
520-SHIFT-OUT	136	550	589			



NAME	DEFINED		REFERENCES				
520-CHI -OUT	137	551	590				
520-HI T-OUT	138	552	591				
520-OUR-OUT	139	553	592				
520-QMARK-OUT	140	554	555	564	565	570	
		571					
520-FSTOP-OUT	141	556	566	572			
520-ARE-I N	143	611					
520-WERE-I N	144	612					
520-YOU-I N	145	613					
520-YOUR-I N	146	614					
520-MY-I N	147	615					
520-I VE-I N	148	616					
520-I M-I N	149	617					
520-I -AM-I N	150	618					
520-ME-I N	151	619					
520-I -I N	152	620					
520-YOURE-I N	153	621					
520-YOU-ARE-I N	154	622					
520-YOURSELF-I N	155	623					
520-AM-OUT	157	611					
520-WAS-OUT	158	612					
520-I -FI X	159	613	629				
520-I M-FI X	160	621	630				
520-I -AM-FI X	161	622	631				
520-MY-FI X	162	614	632				
520-YOUR-FI X	163	615	633				
520-YOUE-OUT	164	616					
520-YOURE-OUT	165	617	618				
520-YOU-FI X	166	619	620	634			
520-MYSELF-OUT	167	623					
520-I -OUT	169	629					
520-I M-OUT	170	630					
520-I -AM-OUT	171	631					
520-MY-OUT	172	632					
520-YOUR-OUT	173	633					
520-YOU-OUT	174	634					
540-REPLY-TABLE-DATA	177	not referenced					
540-REPLY-TABLE	391	referenced by child					
540-REPLY-ENTRY	392	referenced by child					
540-REPLY-LENGTH	394	658					
540-REPLY	395	657					
560-REPLY-LOCATER-DATA	398	not referenced					
560-REPLY-LOCATER-TABLE	436	referenced by child					
560-REPLY-LOCATER-ENTRY	437	referenced by child					
560-REPLY-LO	438	653					
560-REPLY-HI	439	652					
560-REPLY-LAST-USED	440	651	652	*653	656	676	
600-PROGRAM-MESSAGES	442	referenced by child					
600-REPLY-LI ST	443	not referenced					
600-REPLY-DATA	445	not referenced					
600-I NI TI AL-MESSAGE	447	470					
600-GOODBYE-MESSAGE	450	477					

NAME

DEFINED

REFERENCES

600-NO-REPEAT-MSG

453

480

LABEL	DEFINED	REFERENCES
E ELI ZA	466	
P 0000-MAIN LINE	466	not referenced
P 1000-SCAN-FOR-KEYWORD	502	484
P 1100-MASK-STRING-HI	545	504
P 1200-RESTORE-STRING-HI	584	533
P 2000-TRANSLATE-USER-INPUT	605	486
P 3000-BUILD-KEYWORD-REPLY	648	488
P 3100-FIX-MORE-BAD-GRAMMAR	695	663

## Error/Warning summary:

eliza.cbl: 468: warning: DISPLAY statement not terminated by END-DISPLAY  
eliza.cbl: 470: warning: DISPLAY statement not terminated by END-DISPLAY  
eliza.cbl: 472: warning: ACCEPT statement not terminated by END-ACCEPT  
eliza.cbl: 477: warning: DISPLAY statement not terminated by END-DISPLAY  
eliza.cbl: 480: warning: DISPLAY statement not terminated by END-DISPLAY  
eliza.cbl: 518: warning: some digits may be truncated  
eliza.cbl: 520: warning: COMPUTE statement not terminated by END-COMPUTE  
eliza.cbl: 522: warning: COMPUTE statement not terminated by END-COMPUTE  
eliza.cbl: 558: warning: sending field larger than receiving field  
eliza.cbl: 568: warning: sending field larger than receiving field  
eliza.cbl: 574: warning: sending field larger than receiving field  
eliza.cbl: 594: warning: sending field larger than receiving field  
eliza.cbl: 626: warning: sending field larger than receiving field  
eliza.cbl: 637: warning: ignoring redundant .  
eliza.cbl: 637: warning: sending field larger than receiving field  
eliza.cbl: 651: warning: ADD statement not terminated by END-ADD  
eliza.cbl: 661: warning: sending field larger than receiving field  
eliza.cbl: 685: warning: DISPLAY statement not terminated by END-DISPLAY  
eliza.cbl: 716: warning: sending field larger than receiving field

19 warnings in compilation group

0 errors in compilation group